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## A NEW SPECIES OF HYPAGYRTIS (GEOMETRIDAE)

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### ABSTRACT

A new species, *Hypagyrtis brendae*, is described from Arkansas, Kentucky and Missouri. This new species varies from all other known *Hypagyrtis* species in three characteristics: the coloration, the angular relation of the postmedial and medial lines to the inner margin and the postmedial line formation. The male and female types and the male genitalia are figured. The male and female types have been deposited in the United States National Museum.

### INTRODUCTION

AFTER SEVERAL YEARS of extensive investigation of the *Hypagyrtis*, it was revealed that there was an undescribed species occurring in scattered colonies throughout the Midwestern United States. This is supported by three outstanding characteristics: the coloration, the angular relation of the postmedial and medial lines to the inner margin and the postmedial line formation. The genitalia of this new species shows no satisfactory differences from the other members of the genus. The new species exists sympatrically with *H. subatomaria* (Wood) 1839. It is a multi-voltine species with two broods, the second brood being the least common. Its habitat is an acid soil, forest environment in Missouri and Arkansas. It has only been captured in Northwestern Arkansas, North Central Kentucky and Eastern Missouri.

***Hypagyrtis brendae* R. L. Heitzman, new species**

**MALE:** Head: Vertex and front heavily scaled with gray; eyes black; palpi short and gray, extending beyond front about one third diameter of eyes; antennal stalk gray with sprinkling of black scales, pectinations brown.

Thorax: Above, gray, patagia gray extending beyond base of hindwings; below, gray with fine hairs, legs, gray with scattered black scales.

Abdomen: Above, gray with scattered black scales; below, uniformly gray.

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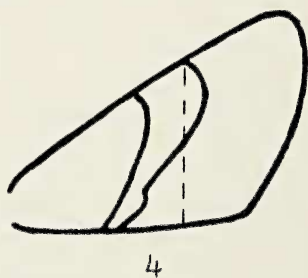
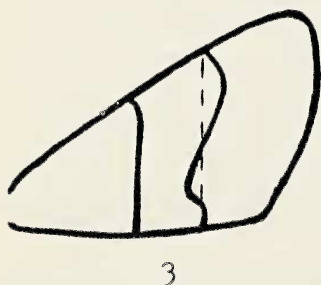
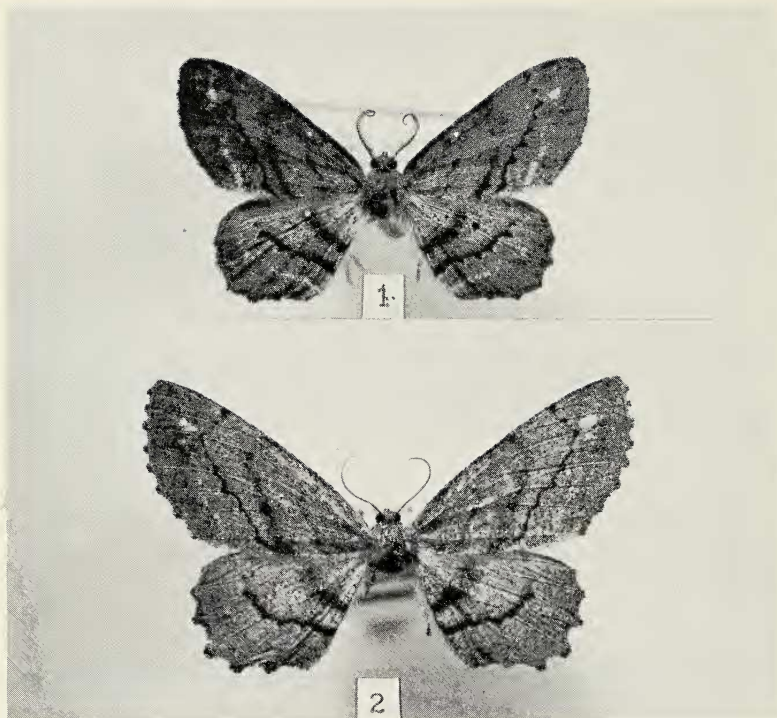


Fig. 1.—*Hypagyrtis brendae*, new species, holotype male, Washington State Park, Washington Co., Missouri, 5 June 1973 (J. R. Heitzman) X 1.75

Fig. 2.—*Hypagyrtis brendae*, new species, allotype female, Washington State Park, Washington Co., Missouri, 7 June 1973 (R. L. Heitzman) X 1.75

Fig. 3.—Diagrammatic drawing of right forewing of typical *Hypagyrtis* spp.

Fig. 4.—Diagrammatic drawing of right forewing of *Hypagyrtis brendae*.

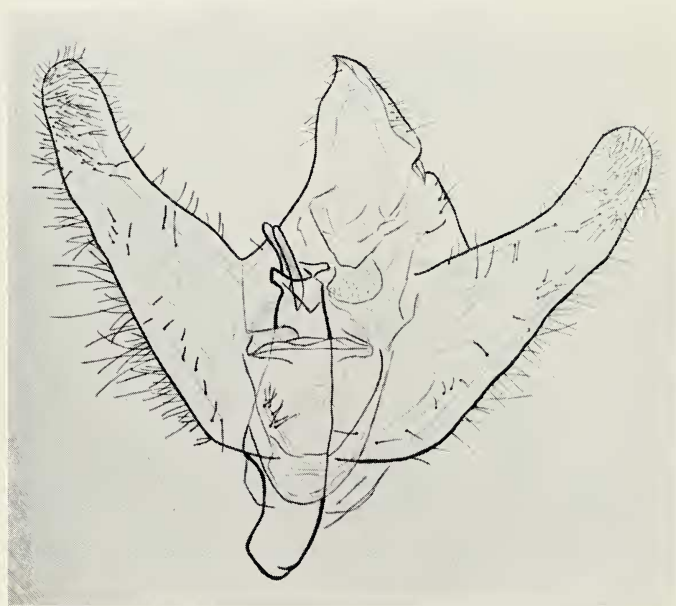
Wings: Dorsal surface: Forewings, ground color gray with scattered black scales except where invaded by small and restricted areas of brown, brown in varying amounts occurs between the subterminal and postmedial lines, along costal margin and basal area; fringe, alternating patches of dark and light scales on outer margin, long hairs on inner margin; subterminal line, white, rarely complete and with white subterminal spot in cell  $R_5$ ; postmedial line, black, complete, convex to subterminal spot and extending nearly straight beyond to inner margin where it enters at a basally inclined angle; medial line, black, diffuse, usually incomplete and entering inner margin obliquely; distal spot, black; antemedial line, black, usually complete. Hindwings, concolorous with forewings but paler at costal and basal areas with brown present only between postmedial and subterminal lines; fringe, as forewings; subterminal line white, rarely complete; postmedial line, black, fading at costal margin; distal spot, black; medial line, black, broad and diffuse, fading at costal margin; gray hairs present in basal area. Ventral surface: Forewings, pale gray scattered with black scales; postmedial line, black, always present; distal spot, black; weak diffuse line sometimes present inside distal spot, outwardly inclined in contrast to postmedial line. Hindwings, concolorous with forewings; postmedial line, black, complete, no fading at costal margin; distal spot, black; medial line, black, sometimes incomplete, again no fading at costal margin.

FEMALE: Same as male; except larger, often lighter and outer margins more scalloped.

ETYMOLOGY: I take pleasure in naming this species for my sister Brenda Heitzman.

FOREWING LENGTH OF TYPE SERIES: Spring brood: Average for 275 males 16.40 mm, range 14-17 mm; for 30 females 19.86 mm, range 18-21 mm. Summer broods: Average for 25 males 12.75 mm, range 12-14 mm; for 3 females 16.50 mm, range 15-17 mm.

TYPES: Holotype, male, Washington State Park, Washington Co., Missouri, 5 June 1973 (J. R. Heitzman); allotype, female, Washington State Park, Washington Co., Missouri, 7 June 1973 (R. L. Heitzman); 299 male and 32 female paratypes: from the type locality: five males and two females, 6 June 1972 (J. R. Heitzman); 70 males and five females, 5 June 1973 (J. R. Heitz-



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Fig. 5.—Male genitalia, *Hypagyrtis brendae*, new species, holotype, ventral view. X 31

man); 40 males and seven females, 5 June 1973 (R. S. Funk); 13 males, 7 June 1973 (J. R. Heitzman); 123 males and two females, 7 June 1973 (R. L. Heitzman); nine males and one female, 18 August 1973 (R. L. Heitzman); five males, 18 August 1973 (J. R. Heitzman); five males, 22 August 1973 (J. R. Heitzman); five males and one female, 22 August 1973 (R. S. Funk); from Dr. E. A. Babler State Park, St. Louis Co., Missouri: seven males, 6 June 1973 (J. R. Heitzman); from Blue Springs State Park, Washington Co., Arkansas: one male and one female, 29 May 1966 (R. L. Heitzman); two females, 29 May 1966 (J. R. Heitzman); one female, 27 May 1967 (R. L. Heitzman); one female, 27 May 1967 (J. R. Heitzman); two females, 31 May 1971 (R. L. Heitzman); one male and two females, 4 June 1971 (J. R. Heitzman); one female, 4 June 1971 (R. L. Heitzman); two females, 6 June 1971 (J. R. Heitzman); one male and one female, 21 August 1971 (J. R. Heitzman); three males and one female, 27 May 1972 (R. L. Heitzman); seven males, 27 May 1972 (J. R. Heitzman); from Leslie Farm, Nelson Co., Kentucky: two males, 23 June 1971 (G. Florence); from Bardstown, Nelson Co., Kentucky: one male, 29 April 1970 (G. Florence); from Horner Bird Sanctuary, Oldham Co., Kentucky: one male, 22 June 1966 (C. V. Covell, Jr.).

**TYPE LOCALITY:** Washington State Park, Washington Co., Missouri, in forested area.

**LOCATION OF TYPES:** The holotype and allotype will be deposited in the type collection of the United States National Museum, Washington, D.C. Paratypes will go to the following institutions and individuals: The Florida State Collection of Arthropods, Gainesville, Florida; American Museum of Natural History, New York, New York; The Entomology Museum of the University of Missouri, Columbia, Missouri; Central Missouri State University, Warrensburg, Missouri; Dr. A. E. Brower, Augusta, Maine; Dr. C. V. Covell, Jr., University of Louisville, Louisville, Kentucky; Richard S. Funk, Illinois State University, Normal, Illinois; Dr. W. C. McGuffin, Biosystematics Research Institute, Ottawa, Ontario; Laurence R. Rupert, Sardinia, New York; and the Heitzman collections.



## DISCUSSION

The coloration of *H. brendae* is unique among the *Hypagyrtis*, as no other species possesses such a color scheme and pattern. The angular relation of the postmedial and medial lines of the forewing to the inner margin of *H. brendae* is strongly oblique (fig. 4); whereas, with all the other *Hypagyrtis* these lines are almost perpendicular to the inner margin (fig. 3). The forewing postmedial line formation of *H. brendae* is nearly straight beyond the st. spot (fig. 4), while in the other species it is deeply concave and jutting to the inner margin (fig. 3). Finally, the subterminal line of *H. brendae* occurs rarely among the rest of the genus.

## ACKNOWLEDGMENTS

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## LITERATURE CITED

WOOD, 1839. *Index Entomologicus*, p. 241, fig. 1673.